

**What is claimed is:**

1                   1. A method for detecting presence of a user at a  
2 telecommunication terminal, comprising the steps of:  
3                   testing acoustic paths communicating audio  
4 information from and back to the telecommunication terminal;  
5 and  
6                   determining the presence of the user based on  
7 changes in the acoustic paths.

1                   2. The method of claim 1 wherein the step of  
2 testing comprises the steps of forming a model of the  
3 acoustic paths;  
4                   detecting modifications in the acoustic paths to  
5 update the model of the acoustic paths; and  
6                   the step of determining comprises the step of using the  
7 detected modifications to determine changes in the acoustic  
8 paths.

1                   3. The method of claim 2 wherein the step of  
2 detecting comprises the steps of applying audio information  
3 transmitted from the telecommunication terminal to the  
4 model of the acoustic paths;  
5                   receiving the transmitted audio information back by  
6 the telecommunication terminal via the acoustic paths;  
7                   determining a difference between an output of the  
8 model of acoustic paths from the received audio information;  
9 and  
10                  calculating a correction to the model of the acoustic  
11 paths using the difference and transmitted audio information.

1                   4. The method of claim 1 wherein the audio  
2 information is at one of within human hearing, above human  
3 hearing and below human hearing.

1                   5. The method of claim 1 wherein the step of  
2 determining the presence comprises the steps of developing  
3 the model of the acoustic paths with the user presence and  
4 not presence at the telecommunication terminal; and  
5                   calculating a threshold of changes in the model of  
6 the acoustic paths that represents the presence or non-  
7 presence of the user at the telecommunication terminal.

1                   6. The method of claim 1 further comprises the  
2 step of performing telecommunication operations by the  
3 telecommunication terminal in responsive to the presence or  
4 non-presence of the user at the telecommunication terminal.

1                   7. The method of claim 6 wherein the  
2 telecommunication operations are send-all-calls.

1                   8. The method of claim 1 further comprises the  
2 steps of controlling the telecommunication terminal by a  
3 telecommunication switching system;  
4                   signaling the telecommunication switching system  
5 by the telecommunication terminal of the presence or non-  
6 presence of the user at the telecommunication terminal; and  
7                   performing telecommunication operations by the  
8 telecommunication switching system in response to the  
9 presence or non-presence of user at the telecommunication  
10 terminal.

1           9. An apparatus for detecting presence of a user at  
2 a telecommunication terminal, comprising:  
3           a transmitter for transmitting audio information;  
4           a receiver for receiving the transmitted audio  
5 information via acoustic paths; .  
6           a model of the acoustic paths for using the audio  
7 information before transmission and for producing an audio  
8 output;  
9           a comparator for determining a difference between  
10 the audio output and received audio information;  
11           a modifier for iteratively generating modifications for  
12 the model of the acoustic paths in responsive to the  
13 difference and audio information before transmission; and  
14           a controller responsive to the modifications for  
15 detecting the presence or non-presence of the user at the  
16 telecommunication terminal.

1           10. The apparatus of claim 9 wherein the controller  
2 further configured for determining modifications when the  
3 user is presence and when the user is not presence; and  
4           the controller calculating a threshold from the  
5 determined modifications indicating the presence or non-  
6 presence of the user.

1           11. The apparatus of claim 9 wherein the audio  
2 information is at one of within human hearing, above human  
3 hearing and below human hearing.

1           12. The apparatus of claim 11 wherein the type of  
2 the audio information is controlled by the controller.

1           13. An apparatus for detecting presence of a user  
2 at a telecommunication terminal, comprising:  
3           an echo canceller for canceling echoes caused by  
4 acoustic paths to audio information from and back to the  
5 echo canceller; and  
6           a controller responsive to changes in the echo  
7 canceller for determining the presence and non-presence of  
8 the user at the telecommunication terminal.

1           14. The apparatus of claim 13 wherein the audio  
2 information is at one of within human hearing, above human  
3 hearing and below human hearing.

1           15. The apparatus of claim 14 wherein the type of  
2 the audio information is controlled by the controller.

1           16. The apparatus of claim 13 wherein the echo  
2 canceller comprises a model of the acoustic paths;  
3           a modifier for generating modifications to the model  
4 based on changes to the acoustic paths; and  
5           the controller responsive to the generated  
6 modifications for determining the presence or non-presence  
7 of the user at the telecommunication terminal.

1           17. The apparatus of claim 16 wherein the modifier  
2 responsive to a difference in an output of the model of the  
3 acoustic paths to audio information before transmission from  
4 the echo canceller and received audio information via the  
5 acoustic paths for generating the modification based on the

6 difference and the audio information before transmission.

1 18. An apparatus for determining presence of a  
2 user at a telecommunication terminal, comprising:

3 an echo detector for detecting echoes caused by  
4 acoustic paths to audio information from and back to the  
5 echo detector; and

6 a controller responsive to changes in the echo  
7 detector for determining the presence and non-presence of  
8 the user at the telecommunication terminal.

1 19. The apparatus of claim 18 wherein the audio  
2 information is at one of within human hearing, above human  
3 hearing and below human hearing.

1 20. The apparatus of claim 19 wherein the type of  
2 the audio information is controlled by the controller.

1 21. The apparatus of claim 18 wherein the echo  
2 detector comprises a model of the acoustic paths;  
3 a modifier for generating modifications to the model  
4 based on changes to the acoustic paths; and  
5 the controller responsive to the generated  
6 modifications for determining the presence or non-presence  
7 of the user at the telecommunication terminal.

1 22. The apparatus of claim 21 wherein the modifier  
2 responsive to a difference in an output of the model of the  
3 acoustic paths to audio information before transmission from  
4 the echo detector and received audio information via the

5 acoustic paths for generating the modification based on the  
6 difference and the audio information before transmission.

1 23. A method detecting presence of a user at a  
2 telecommunication terminal, comprising the steps of:

3 testing for human heat being radiated to the  
4 telecommunication terminal; and

5 determining the presence of the user based on  
6 changes in the radiated human heat.

1 24. The method of claim 23 wherein the step of  
2 determining the presence comprises the steps of detecting  
3 human heat with the user presence and not presence at the  
4 telecommunication terminal; and

5 calculating a threshold of changes in the human  
6 that represent the presence or non-presence of the user at  
7 the telecommunication terminal.

1 25. The method of claim 24 further comprises the  
2 step of performing telecommunication operations by the  
3 telecommunication terminal in responsive to the presence or  
4 non-presence of the user at the telecommunication terminal.

1 26. The method of claim 25 wherein the  
2 telecommunication operations are send-all-calls.

1 27. The method of claim 24 further comprises the  
2 steps of controlling the telecommunication terminal by a  
3 telecommunication switching system;

4 signaling the telecommunication switching system

5 by the telecommunication terminal of the presence or non-  
6 presence of the user at the telecommunication terminal; and  
7 performing telecommunication operations by the  
8 telecommunication switching system in response to the  
9 presence or non-presence of user at the telecommunication  
10 terminal.

1 28. An apparatus for detecting presence of a user  
2 at a telecommunication terminal, comprising:  
3 a heat sensor for detecting human heat; and  
4 a controller responsive to changes in the human  
5 heat for determining the presence and non-presence of the  
6 user at the telecommunication terminal.

1 29. The apparatus of claim 28 wherein the  
2 controller further configured for determining changes in  
3 human heat when the user is presence and when the user is  
4 not presence; and  
5 the controller calculating a threshold from the  
6 determined changes indicating the presence or non-  
7 presence of the user.

1 30. A processor-readable medium for detecting  
2 presence of a user at a telecommunication terminal,  
3 comprising processor-executable instructions configured for:  
4 testing acoustic paths communicating audio  
5 information from and back to the telecommunication terminal;  
6 and  
7 determining the presence of the user based on  
8 changes in the acoustic paths.

1           31. The processor-readable medium of claim 30  
2 wherein the testing comprises forming a model of the  
3 acoustic paths;  
4           detecting modifications in the acoustic paths to  
5 update the model of the acoustic paths; and  
6           the determining comprises using the detected  
7 modifications to determine changes in the acoustic paths.

1           32. The processor-readable medium of claim 31  
2 wherein the detecting comprises applying audio information  
3 transmitted from the telecommunication terminal to the  
4 model of the acoustic paths;  
5           receiving the transmitted audio information back by  
6 the telecommunication terminal via the acoustic paths;  
7           determining a difference between an output of the  
8 model of acoustic paths from the received audio information;  
9 and  
10          calculating a correction to the model of the acoustic  
11 paths using the difference and transmitted audio information.

1           33. The processor-readable medium of claim 30  
2 wherein the audio information is at one of within human  
3 hearing, above human hearing and below human hearing.

1           34. The processor-readable medium of claim 30  
2 wherein the determining the presence comprises developing  
3 the model of the acoustic paths with the user presence and  
4 not presence at the telecommunication terminal; and  
5           calculating a threshold of changes in the model of  
6 the acoustic paths that represents the presence or non-



7 presence of the user at the telecommunication terminal.

1 35. The processor-readable medium of claim 30  
2 further comprises the performing telecommunication  
3 operations by the telecommunication terminal in responsive  
4 to the presence or non-presence of the user at the  
5 telecommunication terminal.

1 36. The processor-readable medium of claim 35  
2 wherein the telecommunication operations are send-all-calls.

1 37. The processor-readable medium of claim 30  
2 further controlling the telecommunication terminal by a  
3 telecommunication switching system;  
4 signaling the telecommunication switching system  
5 by the telecommunication terminal of the presence or non-  
6 presence of the user at the telecommunication terminal; and  
7 performing telecommunication operations by the  
8 telecommunication switching system in response to the  
9 presence or non-presence of user at the telecommunication  
10 terminal.